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| APPLICATION NO.   | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO.                 | CONFIRMATION NO.       |
|---|-------------|----------------------|-------------------------------------|------------------------|
| 10/581,113  | 05/31/2006  | Koshi Takamura       | 043888-0469                         | 5363                   |
| 53080 7590 07/28/2009<br>MCDERMOTT WILL & EMERY LLP<br>600 13TH STREET, NW<br>WASHINGTON, DC 20005-3096 |             |                      | EXAMINER<br>CHUO, TONY SHENG HSIANG |                        |
|   |             |                      | ART UNIT<br>1795                    | PAPER NUMBER           |
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

**Application No.**

10/581,113

**Applicant(s)**

TAKAMURA ET AL.

**Examiner**

Tony Chuo

**Art Unit**

1795

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 May 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SF/ICE)
- Paper No(s)/Mail Date 5/31/06
- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date \_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_

## **DETAILED ACTION**

### ***Priority***

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Information Disclosure Statement***

2. The information disclosure statement (IDS) submitted on 5/31/06 was filed on 5/31/06. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

### ***Drawings***

3. The drawings filed on 5/31/06 are accepted by the examiner.

### ***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claim 6 is rejected under 35 U.S.C. 102(b) as being anticipated by Takahashi et al (JP 08-287968).

The Takahashi reference discloses a thin film for a case of an alkaline battery that is formed by stacking at least a resin film "10" that is made of polyethylene or polypropylene (alkali-resistant polymer film) and a resin film "12" that is made of polyamide or polytetrafluoroethylene (polymer film having gas barrier properties) (See paragraphs [0004],[0005],[0015]).

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsumoto et al (JP 63-138668) in view of Takahashi et al (JP 08-287968), and further in view of Kuroki et al (JP 2003-017144).

The Matsumoto reference discloses a thin air battery comprising: a power generating element composed of a laminate in which air diffusing paper "2", a polymer film (water repellent film), a positive electrode, a separator "4", and a negative electrode "5" are stacked in this order, and an electrolyte is contained in the positive electrode, separator, and negative electrode; and a casing (package) composed of a first sheet layer "1b" having air inlet holes and covering the positive electrode side of the power generating element, a third sheet layer "6" covering the negative electrode side of the power generating element, and a second sheet layer "7" located in the peripheral

portion between the first sheet layer and the third sheet layer and joined to the two sheet layers (See Abstract and Drawing 3). Examiner's note: An English translation of the Matsumoto reference has been requested by the examiner and will be available with the next office action.

However, Matsumoto et al does not expressly teach a first sheet layer, a second sheet layer, and a third sheet layer, each comprising a thin film formed by stacking at least an alkali-resistant polymer film having hydrogen gas permeability and a polymer film having gas barrier properties, wherein in each of the first sheet layer and the third sheet layer, the polymer film having hydrogen gas permeability is disposed on the internal surface side, wherein the polymer film having hydrogen gas permeability is composed of a material selected from the group consisting of polyethylene, polypropylene, and polysulfone; wherein the polymer film having gas barrier properties is polyethylene naphthalate, polyethylene terephthalate, polyphenylene sulfide, polyamide, polyvinyl chloride, ethylene-vinyl alcohol copolymer, ethylene-vinyl acetate copolymers, and ionomer resins; wherein the polymer film having gas barrier properties is composed of a fluorine-containing polymer material; and wherein at least one of the first sheet layer, second sheet layer, and third sheet layer comprises a metal sheet layer that is not corroded by aqueous alkaline solutions.

The Takahashi reference discloses a sealant that is part of the casing (package) of an air battery that comprises a thin film formed by laminating a resin film "10", an aluminum layer "11" (metal sheet that is not corroded by aqueous alkaline solutions), and a resin film "12", wherein the resin film "10" is made of polyethylene or

polypropylene (hydrogen gas permeable polymer film disposed on the internal surface side) and the resin film "12" is made of polyamide or polytetrafluoroethylene (gas barrier polymer film) (See Drawing 1(b) and paragraphs [0015],[0016]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the Matsumoto air battery to include a first sheet layer, a second sheet layer, and a third sheet layer each comprising a thin film formed by stacking at least an alkali-resistant polymer film having hydrogen gas permeability and a polymer film having gas barrier properties, wherein in each of the first sheet layer and the third sheet layer, the polymer film having hydrogen gas permeability is disposed on the internal surface side, wherein the polymer film having hydrogen gas permeability is composed of a material selected from the group consisting of polyethylene or polypropylene; wherein the polymer film having gas barrier properties is polyamide or polytetrafluoroethylene; and wherein at least one of the first sheet layer, second sheet layer, and third sheet layer comprises an aluminum layer that is not corroded by aqueous alkaline solutions in order to utilize casing material that can discharge a small quantity of hydrogen gas generated in a negative electrode, thereby preventing degradation of the battery preservation performance (See paragraph [0006]).

However, Matsumoto et al as modified by Takahashi et al does not expressly teach a lead of the air electrode and a lead of the negative electrode drawn out of the package from between the second sheet layer and the first sheet layer or third sheet layer. The Kuboki reference discloses a battery comprising a positive pole terminal "2" (lead) of the positive electrode and a negative pole terminal "3" (lead) of the negative

electrode that extend from container "1" (package) between a first sheet layer "1" and a second sheet layer "4" (See paragraphs [0066] and Drawings 1 and 6).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the Matsumoto/Takahashi air battery to include a lead of the air electrode and a lead of the negative electrode drawn out of the package from between the second sheet layer and the first sheet layer or third sheet layer in order to be able to extract electrical energy from an air battery that has a casing made of non-conductive materials.

8. Claims 1-3 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsumoto et al (JP 63-138668) in view of Yamazaki et al (US 6632538).

The Matsumoto reference discloses a thin air battery comprising: a power generating element composed of a laminate in which air diffusing paper "2", a polymer film (water repellent film), a positive electrode, a separator "4", and a negative electrode "5" are stacked in this order, and an electrolyte is contained in the positive electrode, separator, and negative electrode; and a casing (package) composed of a first sheet layer "1b" having air inlet holes and covering the positive electrode side of the power generating element, a third sheet layer "6" covering the negative electrode side of the power generating element, and a second sheet layer "7" located in the peripheral portion between the first sheet layer and the third sheet layer and joined to the two sheet layers (See Abstract and Drawing 3). Examiner's note: An English translation of the Matsumoto reference has been requested by the examiner and will be available with the next office action.

However, Matsumoto et al does not expressly teach a lead of the air electrode and a lead of the negative electrode drawn out of the package from between the second sheet layer and the first sheet layer or third sheet layer; and a first sheet layer, a second sheet layer, and a third sheet layer each comprising a thin film formed by stacking at least an alkali-resistant polymer film having hydrogen gas permeability and a polymer film having gas barrier properties, wherein in each of the first sheet layer and the third sheet layer, the polymer film having hydrogen gas permeability is disposed on the internal surface side, wherein the polymer film having hydrogen gas permeability is composed of a material selected from the group consisting of polyethylene, polypropylene, and polysulfone; wherein the polymer film having gas barrier properties is polyethylene naphthalate, polyethylene terephthalate, polyphenylene sulfide, polyamide, polyvinyl chloride, ethylene-vinyl alcohol copolymer, ethylene-vinyl acetate copolymers, and ionomer resins; and wherein at least one of the first sheet layer, second sheet layer, and third sheet layer comprises a metal sheet layer that is not corroded by aqueous alkaline solutions.

The Yamazaki reference discloses tabs "59" & "60" (positive and negative leads) that extend outside a battery case "51" between a first sheet layer and a second sheet layer, wherein the battery case comprises a thin film formed by laminating a first base film layer "1a" (polymer film having gas barrier properties), a metal foil layer "2" (metal sheet that is not corroded by aqueous alkaline solutions), and a heat adhesive resin layer "3" (polymer film having hydrogen gas permeability/innermost layer), wherein the first base film layer "1a" is made of polyethylene terephthalate or polyethylene



naphthalate and the heat adhesive resin layer "3" is made of polyethylene or polypropylene (See column 4 lines 43-45, column 5 lines 49-55, column 9 lines 27-29 and Figures 1 and 5).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the Matsumoto air battery to include a lead of the air electrode and a lead of the negative electrode drawn out of the package from between the second sheet layer and the first sheet layer or third sheet layer; and a first sheet layer, a second sheet layer, and a third sheet layer each comprising a thin film formed by stacking at least an alkali-resistant polymer film having hydrogen gas permeability and a polymer film having gas barrier properties, wherein in each of the first sheet layer and the third sheet layer, the polymer film having hydrogen gas permeability is disposed on the internal surface side, wherein the polymer film having hydrogen gas permeability is composed of a material selected from the group consisting of polyethylene or polypropylene; wherein the polymer film having gas barrier properties is polyethylene naphthalate or polyethylene terephthalate; and wherein at least one of the first sheet layer, second sheet layer, and third sheet layer comprises a metal sheet layer that is not corroded by aqueous alkaline solutions in order to be able to extract electrical energy from the battery and to provide a lightweight, thin battery case that has excellent properties in strength and durability and is capable of being easily processed (See column 1, lines 33-37).

9. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Matsumoto et al (JP 63-138668) in view of Yamazaki et al (US 6632538) as applied to claim 1 above, and further in view of Kejha et al (2004/0018425).

However, Matsumoto et al as modified by Yamazaki et al does not expressly teach a polymer film having gas barrier properties that is composed of a fluorine-containing polymer material. The Kejha reference discloses a packaging enclosure for a battery comprising polyvinylidene fluoride (See paragraph [0038]).

Therefore, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the disclosure of Kejha indicates that polyvinylidene fluoride is a suitable material for use as a packaging enclosure for a battery. The selection of a known material based on its suitability for its intended use has generally been held to be *prima facie* obvious (MPEP §2144.07). As such, it would be obvious to use polyvinylidene fluoride.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tony Chuo whose telephone number is (571)272-0717. The examiner can normally be reached on M-F, 9:00AM to 5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

TC

/PATRICK RYAN/  
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